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The project "Development and Verification of a Comprehensive Community Model for Physical Processes in the Nearshore Ocean", referred to hereafter as the NOPP Nearshore Project, represented a five year effort commencing in August 1999, aimed at advancing the state of numerical prediction for nearshore wave-driven processes. The effort involved investigators from eight institutions. Principal results from the effort can be divided in two categories; the model system NearCoM, and the body of scientific advances represented by published literature supported by the project.

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Development and Verification of a Comprehensive Community Model for Physical Processes in the Nearshore Ocean

Final Report

A project funded by
National Oceanographic Partnership Program

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The project "Development and Verification of a Comprehensive Community Model for Physical Processes in the Nearshore Ocean", referred to hereafter as the NOPP Nearshore Project, represented a five year effort commencing in August 1999, aimed at advancing the state of numerical prediction for nearshore wave-driven processes. The effort involved investigators from eight institutions. Principal results from the effort can be divided in two categories; the model system NearCoM, and the body of scientific advances represented by published literature supported by the project.

The model system NearCoM provides an open source framework for coupling wave, circulation and morphology modules in order to provide an integrated analysis of wave-driven nearshore current and sediment transport processes. An overview and access to the model system is provided by the web site
http://chinacat.coastal.udel.edu/~kirby/programs/nearcom/index.html,
which will be maintained by the PI Kirby for the foreseeable future.
This site provides access to individual modules and the master program which provides the coupling framework, including documentation and sample configurations.

An overview of the scientific goals of the project are presented on the web site http://chinacat.coastal.udel.edu/~kirby/NOPP/index.html, which provides a list of publications resulting from support for the project.
Among the highlights of the scientific output are:

(1) The textbook "Introduction to Nearshore Hydrodynamics" by Ib. A. Svendsen.

(2) Advances in the formulation of the three-dimensional wave-current interaction problem, including papers by Mellor, and Newberger and Allen. The Mellor papers have formed the basis for a large body of subsequent and continuing work.

(3) Work by Drake, Calantoni and Hsu illustrating the importance of acceleration (or pressure gradient) in sediment transport predictions, and it's relation to the timing of instantaneous bed shear stress.

This work is only a small sampling from the 64 journal articles, two book chapter review articles and 1 textbook that are presently listed on the project web page.